WHAT IS CLAIMED IS:

1. An optical transmitter, comprising:

a laser diode;

a laser driver having a data input for receiving input data and providing a drive signal to the laser diode corresponding to the input data;

a laser diode power monitoring photodiode for monitoring the laser optical output power and providing a laser power monitoring signal; and

an automatic power control circuit coupled to the laser driver and the laser diode power monitoring photodiode, the automatic power control circuit receiving the laser power monitoring signal from the laser diode power monitoring photodiode and providing a power control signal to the laser driver, the automatic power control circuit comprising a peak detector for detecting peak levels of the laser power monitoring signal, an analog level memory for storing said peak levels, and a comparator for comparing the peak levels to a reference level and providing an error signal, the automatic power control circuit employing the error signal to provide the power control signal to the laser driver.

2. An optical transmitter as set out in claim 1, wherein said automatic power control circuit further comprises a transimpedance amplifier for converting the laser power monitoring signal to a voltage signal and providing the voltage signal to the peak detector.

3. An optical transmitter as set out in claim 1, wherein said analog level memory comprises a peak sample and hold circuit.

4. An optical transmitter as set out in claim 1, wherein said comparator comprises an amplifier and wherein said automatic power control circuit further comprises a low pass filter coupled to the amplifier and filtering the error signal from the amplifier and providing the filtered error signal as said power control signal.

5. An optical transmitter as set out in claim 1, wherein the transmitter transmits in data bursts and wherein said transmitter receives a sleep signal between bursts.

6. An optical transmitter as set out in claim 5, wherein said automatic power control circuit further comprises a timing circuit receiving the sleep signal and a selector switch coupled to the timing circuit and receiving the power control signal as an input, the selector switch outputting the power control signal to the laser driver during burst transmission and a preset low power sleep control signal to the laser driver between bursts under the control of the timing circuit.

7. An optical transmitter as set out in claim 1, wherein said automatic power control circuit further comprises a timing circuit receiving the sleep signal and wherein said timing circuit places said analog level memory in a hold state storing the peak level between bursts in response to the sleep signal.

8. An optical transmitter as set out in claim 7, wherein said analog level memory comprises a peak sample and hold circuit and wherein said timing circuit places said peak sample and hold circuit in a hold state in response to said sleep signal.

9. An optical transmitter as set out in claim 1, further comprising a shut-off control circuit, coupled to the automatic power control circuit, for powering down the laser driver if the monitored power exceeds a preset safety level.

10. An optical transmitter as set out in claim 9, wherein the shut-off control circuit comprises a laser power monitoring circuit receiving the peak level from the automatic power control circuit and a shut-off circuit for providing a power down control signal to the laser driver if the monitored power exceeds the preset safety level.

11. An optical transmitter as set out in claim 10, wherein said transmitter receives a sleep signal between bursts and wherein said automatic power control circuit

further comprises a selector switch receiving the power control signal as an input, the selector switch outputting the power control signal to the laser driver during burst transmission and a preset low power sleep control signal to the laser driver between bursts and wherein the shut-off circuit provides the sleep signal to the automatic power control circuit if the monitored power exceeds the preset safety level.

12. An optical transmitter, comprising:

a laser diode;

a laser driver having a data input for receiving input data and providing a drive signal to the laser diode corresponding to the input data, the drive signal having a modulation level for a high data input logic level and a bias level for a low input logic level;

a laser diode power monitoring photodiode providing a laser power monitoring signal; and

an analog dual loop automatic power control circuit coupled to receive the laser power monitoring signal, the automatic power control circuit comprising:

a peak and valley detector for detecting peak levels of the laser power monitoring signal corresponding to the modulation level and valley levels of the laser power monitoring signal corresponding to the bias level,

an analog level memory coupled to the peak and valley detector for storing said peak levels and valley levels,

a first amplifier for amplifying the difference between the peak levels and a first reference level and providing a modulation error signal, and

a second amplifier for amplifying the difference between the valley levels and a second reference level and providing a bias error signal,

the automatic power control circuit controlling the modulation level of the laser driver drive signal in response to the modulation error signal and controlling the bias level of the laser driver drive signal in response to the bias error signal.

13. An optical transmitter as set out in claim 12, wherein said analog level memory comprises a peak sample and hold circuit and a valley sample and hold circuit.

14. An optical transmitter as set out in claim 12, wherein said automatic power control circuit further comprises a first low pass filter coupled to the first amplifier and filtering the error signal from the first amplifier and providing the filtered error signal to the laser driver as a modulation power control signal and a second low pass filter coupled to the second amplifier and filtering the error signal from the second amplifier and providing the filtered error signal to the laser driver as a bias power control signal.

15. An optical transmitter as set out in claim 13, wherein said transmitter transmits data in bursts and wherein said transmitter receives a sleep signal between bursts and wherein said automatic power control circuit further comprises a first selector switch coupled to the first low pass filter and receiving the modulation power control signal as an input, the first selector switch outputting the modulation power control signal to the laser driver during burst transmission and a preset low power sleep control signal to the laser driver between bursts in response to the sleep signal.

16. An optical transmitter as set out in claim 15, wherein said automatic power control circuit further comprises a second selector switch coupled to the second low pass filter and receiving the bias power control signal as an input, the second selector switch outputting the bias power control signal to the laser driver during burst transmission and a preset low power sleep control signal to the laser driver between bursts in response to the sleep signal.

17. An optical transmitter as set out in claim 12, wherein said transmitter transmits data in bursts and wherein said transmitter receives a sleep signal between bursts and wherein said automatic power control circuit further

comprises a timing circuit receiving the sleep signal and wherein said timing circuit places said analog level memory in a hold state storing the peak level and valley level between bursts in response to the sleep signal.

18. An optical transceiver, comprising:

a transmitter comprising a laser diode providing modulated optical signals, a laser driver coupled to a data input and providing a drive signal to the laser diode corresponding to the input data, a laser diode power monitoring photodiode providing a laser power monitoring signal, and analog power control means for sampling and holding the laser power monitoring signal, comparing the sampled laser power monitoring signal to a reference value to derive an error signal, and controlling the laser driver based on the error signal; and

a receiver comprising a front end coupled to receive input modulated light from an optical fiber and providing a corresponding digital electrical signal and a back end coupled to receive the digital electrical signal and provide output clock and data signals.

19. A burst mode optical data transmission system, comprising:

a plurality of transmitters providing burst mode modulated optical signals, each of said transmitters including optical power monitoring means for monitoring the output optical power and analog power control means for sampling the monitored optical power and controlling the optical power based on the difference between the monitored output optical power and a reference value, the analog power control means including analog level memory means for storing the sampled optical power level between bursts;

at least one optical fiber optically coupled to the transmitters; and

a receiver optically coupled to the fiber and receiving the burst mode modulated optical signals.

20. A method for transmitting data over an optical network in a burst mode, comprising:

providing modulated light to an optical fiber in a burst, the burst comprising a plurality of data bits;

monitoring the output optical power of the modulated light;

sampling the monitored output optical power;

comparing the sampled optical power to a reference value;

providing an error signal based on the difference between the sampled optical power and the reference value;

controlling the transmitted optical power based on the error signal;

placing the transmitter in a low power sleep mode after transmission of the burst; and

storing the sampled optical power level until transmission of the next burst.